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The Impact of Earnings variability and Regulatory Measures on Income Smoothing: Evidence from Panel Regression

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Abstract: This study investigates the impact of variability in earnings, stringent regulatory measures and the trend of extending loans while keeping in view deposit ratio on income smoothening practices for a sample of 20 commercial banks listed on the Pakistan Stock Exchange (PSX) from the year 2010 to 2017. The likelihood of smoothing activities is measured through its widely used proxy, i.e. loan loss provisions (LLPs). Moreover, earnings before tax and provisions (EBTP) and loan to deposit ratio (LD) have been incorporated to determine the impact of earnings and loans to deposit ratio on income smoothening. We find that commercial banks are less likely to manage earnings through smoothening practices, which shows that commercial banks adhere to regulatory restrictions. This is further supported by the fact that income smoothing activities decrease as a result of the increase in capital adequacy ratios after the imposition of stringent rules, which exert greater regulatory pressure on banks, whereas the pace of income smoothing increases as a result of an increase in loans to deposit ratio, which reveals that banks take credit risk but manage within the ambit of regulatory restrictions. Based on the findings, we argue that the imposition of regulatory restrictions through the State Bank of Pakistan (SBP) has not only discouraged income smoothening through loan loss provisions but also enhances reporting quality. The results of this study provide useful insights for investors, creditors and stakeholders.

Keywords: income smoothing, earnings variability, regulatory measures, capital adequacy ratio, loan to deposit ratio.

JEL Code: G21, B26, C23

1. Introduction

Banks are financial institutions that contribute primarily to economic growth through the collection of deposits and issuance of loans to individuals, firms and governments to finance consumption, investment and capital expenditure. Sometimes, the lending activity of the banks gives rise to credit risk when borrowers are unable to repay. The specific amounts set aside by the banks as a cushion to mitigate credit risk is termed loan loss provisions (LLPs) (Ozili & Outa, 2017).

During good times, managers use discretionary items such as LLPs, and net charge offs in the profit and loss account in order to decrease the amount of profits. During bad times, those items can be reversed to increase the amount of profit that would otherwise have been reported (Pérez, Salas-Fumás, & Saurina, 2006). Bank LLPs is a key accrual and smoothing tool used by bank managers. Bank managers also use discretion in the determination of LLP estimates for opportunistic purposes (Wahlen, 1994). Further, earlier research in banking reveals that bank managers usually engage in discretionary behaviour as they employ income smoothing practices to reduce the variability of profits over time (Ahmed, Takeda, & Thomas, 1999; Beatty, Chamberlain, & Magliolo, 1995; Beaver & Engel, 1996; Collins, Shackelford, & Wahlen, 1995; Kanagaretnam, Lobo, & Yang, 2004).

The Basel II Accord highlights the importance of the risk sensitivity of bank assets as compared to the 1988 Basel Accord I. Basel II focuses on constraining risk-taking activities of the banks by imposing higher capital requirements on riskier assets (Bancaria, 2004). More specifically, they decrease/increase LLPs when their banks' capital adequacy ratios are high or low. Regulatory pressure may induce bank managers either to reduce their risky activities or engage in income smoothing in order to reduce earnings volatility. Furthermore, banks with a lower capital adequacy ratio may continue their risky activities to sustain their revenue streams. Accordingly, bank managers with low-capital may engage in greater income smoothing to reduce the volatility of earnings as compared to the banks with a high capital ratio that may not resort to income smoothing (Lim & Yong, 2017).

The provision against losses reduces the performance of major banks in the US and Europe. The same phenomena were also experienced during the 2008 global financial crises when banks significantly raised their LLPs accounts, which eroded bank profit and led to losses that ultimately depleted bank capital (Ozili & Outa, 2017). In Pakistan, research has been carried to study the impact of the Basel capital standards on financing behaviour in the case of Islamic banks

(Ayub & Javeed, 2016). Further, Rashid & Khalid (2018) examined the impact of capital level on risk-taking behaviour in Pakistani banks and found that banks with capital levels higher than the regulatory requirements are inclined towards investment in risky assets.

This study contributes to the existing research by exploring the interaction between income smoothing through LLPs in the context of Pakistan. Earlier research focused on European countries and Islamic blocs; they have not assessed whether LLPs are used for income smoothening and to achieve management objectives in the case of Pakistan. Further, income smoothening measures the level of reported earnings, which reduces the role of informativeness of LLP estimates, especially for investors and regulators. Secondly, we study the impact of imposing a higher Capital Adequacy Ratio (CAR) on smoothing of income in Pakistani commercial banks, as literature also reveals that income smoothening increases due to the imposition of stringent regulations like the imposition of the CAR on income smoothening. Therefore, this study focuses on how bank managers respond to the changes in the CAR. Thirdly, the findings of this study have important implications for investors, regulators and analysts concerned with changes in the regulatory environment like CAR, which may affect reporting quality, capital structure (Sakti, Tareq, Saiti, & Akhtar, 2017) and future performance.

The remainder of the paper is organised as follows. Section 2 describes the literature review and hypotheses development. Section 3 presents the research design and sample selection, which includes sample selection and data, model specification and variables, and estimation strategy. Empirical results are discussed in section 4, while section 5 concludes the study.

2. Literature Review and Hypotheses Development

LLPs play an integral role in the stability of banks. Bank regulators and creditors require banks to maintain a significant amount in the LLPs account, but there is no regulatory provision as to how much that amount should be. Furthermore, bank managers opportunistically exploit their discretion regarding the overstatement of LLPs as a safety net for meeting the expected losses. Earning management in the banking sector and income smoothing through LLPs and its possible impact on capital advocacy ratio is an emerging issue, especially after global financial crises as the confidence of investors, has been shaken due to the manipulation of LLPs. Previous studies also argued that LLPs are used for capital and earning management (e.g. Moyer, 1990; Collins, Shackelford, & Wahlen, 1995; Kim and Kross, 1998).

2.1. Impact of Earning Variability on Loan Loss Provisions (LLPs)

Banks use LLPs as an incentive to smooth their reported earnings overtime to meet their regulatory and reporting objectives (Wahlen, 1994; Greenawalt & Sinkey, 1988). Earlier studies show that banks use LLPs for smoothing of income. This usually depends on their objective, which includes size and variability of earning as well as regulatory capital requirements (Ozili & Outa, 2017). Bank managers use discretionary powers to estimate LLPs and reduce earnings variability (Agarwal, Chomsisengphet, Liu, & Rhee, 2007; Kim & Kross, 1998). One of the major arguments in this area is that when the earnings are on the higher side, bank authorities set aside some of the earnings in the form of provision in anticipation of losses and fluctuations for rainy days. Smoothing studies have also been carried out in different regions ranging from the US, Europe, the Middle East and North Africa (MENA), Australia, Africa to Asia, to examine the banks provisioning. Balboa, López-Espinosa, & Rubia (2013) found that bank managers use LLPs as a tool to smooth their earnings, particularly when they have income on the positive side. On the other hand, banks maintain less LLPs account when the earnings are low (Skała, 2015). Caporale, Alessi, Di Colli, & Lopez (2015) also found that LLPs in Italian banks are not driven through income smoothening, which is a discretionary earning management practice. Bryce, Dadoukis, Hall, Nguyen, & Simper (2015) also found that Vietnamese banks did not use LLPs for income smoothening. In other studies, Koju, Koju, & Wang (2018) found that Non-performing-loans have significant positive relationship with the export to import ratio, inefficiency, and assets size and a negative relationship with the GDP growth rate, capital adequacy, and inflation rate. The discussion of the above-cited literature leads to the following hypothesis:

$\mathbf{H}_1$: There is a significant negative relationship between variability in earnings before tax and provisions (EBTP) and loan loss provisions (LLPs).

2.2. Capital Adequacy Ratio and Income Smoothing

Capital adequacy or regulatory capital is the amount of capital held by a bank as per the requirement of the financial regulator. It gives coverage to the bank against all sorts of risks which are uninsured and usually not secure and result in losses at a later stage. The purpose of maintaining capital adequacy is to counter systemic fragilities, to ensure that banks have sufficient capital to contain the menace of unexpected losses, to protect depositors, claim holders and to provide confidence to all stakeholders including investors and rating agencies[1].

[1] Regulatory capital and its functions. Retrieved from http://www.sbp.org.pk/BS/RCF.asp

In Pakistan, the State Bank of Pakistan (SBP) implemented Basel I in 1997. It only accounted for the credit risk faced by the bank. Afterwards, the revised version of Basel I was introduced in 2004, which included criteria for calculating risk-weighted assets for the market risk as well. Basel II was implemented in the year 2008. It required banks to calculate their risk-based CAR against credit, market as well as operational risks. Further, SBP implemented Basel III in a phased manner.[2] In Basel III, the leverage ratio was introduced as the third capital standard, it was implemented analogous from the end of the first of quarter of the year 2014, but it will be fully implemented from 2019. Therefore, we have used CAR as a regulatory measure in this study.[3]

Theoretically, banks engage in income smoothing to reduce the perceived risks inherent in their operations. In Turkey, Acar & Ipci (2015) investigated the role of LLPs in earning management in 28 commercial banks and found that income smoothening behaviour was reduced after financial crises. Further, Abdul Adzis, Tripe, & Dunmore (2016) studied Hong Kong banks and found that income smoothening reduced after the adoption of international accounting standards. Furthermore, income smoothing reduces earnings variability, which ultimately reduces the perceived risk (Francis, LaFond, Olsson, & Schipper, 2004). Dong, Liu, & Hu (2012) studied the LLPs, earnings and capital management of 14 Chinese commercial banks from the year 2001-2009 and found that there is a significant negative relationship between the discretionary loan loss provisions (DLLPs) and the CAR. Abdul Wahab, Sait, Rosly, & Masih (2017) found the positive relationship between capital ratio (CAR) and risk-weighted asset ratio (RWA) in the long run.

Basel II exerted greater regulatory pressure by imposing greater capital requirement, which can, in turn, have an adverse influence on the earnings. Increased regulatory pressure arises due to the Basel Accords in the form of greater capital adequacy ratio, which ultimately affects the income smoothing activities of the banks. Topbaş (2018) found that, in the Turkish banking system, the Basel II capital adequacy ratio is procyclical in normal and crisis times. As a result, it is hypothesised that stringent implementation of capital adequacy ratios increases pressure on bank managers to engage in income smoothing. Following the above literature, we develop the following testable hypothesis:

H_2: There is a significant negative relationship between loan loss provisions (LLPs) and capital adequacy ratios (CAR).

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[2] Implementation of Basel Capital Framework in Pakistan, retrieved from http://www.sbp.org.pk/BS/Bai.asp

[3] Guidelines on Basel III Implementation in Pakistan May 2013. (2013). Retrieved from http://www.sbp.org.pk/bsrvd/pdf/DCGuidelines/Draft%20Basel%203%20Guidelines%20(BPC).pdf

2.3. Loans to Deposit Ratio and Income Smoothing

The loan to deposit ratio (LD) is an important proxy of external financing. It measures the relationship between the ratio of loans and deposits and income smoothing through loan loss provisions (LLPs). When the ratio is on the higher side, banks need more funds for external financing. As a result, banks report less discretionary loan loss provisions (DLLPs) to show less alleged credit risks and high income in order to attract more deposits from creditors as well to win the confidence of creditors so that they divert their funds towards banks. Moreover, DLLPs are negatively associated with the LD of conventional banks (Kanagaretnam, Lobo, & Mathieu, 2004; Kwak, Lee, & Eldridge, 2009). Therefore, in order to attract external funds, banks reduce the variability in earnings by increasing LLPs when earnings are high and decrease LLPs when earnings are low (Zoubi & Al-Khazali, 2007; Adzis, Tripe, & Dunmore, 2010). Mashamba and Magweva (2019) found that the Liquidity coverage ratio has been effective in persuading banks in emerging markets to garner more stable retail deposits. On the basis of the above-cited literature, we suggest the following hypothesis:

H_3: The extent of income smoothing through LLPs is positively related to the loans to deposit ratio.

3. Research Design and Sample Selection

3.1. Sample Selection and Data

This study has used a sample of 20 commercial banks listed on the Pakistan Stock Exchange (PSX)[4] during the years 2010 to 2017. We extract bank-specific variables data from the balance sheet analysis published by the State Bank of Pakistan (SBP) for the financial sector for the 2010-2017 period. Financial statements issued by the State Bank of Pakistan are authentic documents. It is a comprehensive and reliable data source, which provides consolidated information on the financial sector of the country. Furthermore, the data pertaining to the CAR is collected from the annual reports of the sample banks.

[4] Formally Karachi Stock Exchange (KSE)

3.2. Model Specifications

To study the impact of variability in earnings, capital adequacy ratio (CAR) and loan to deposit ratio (LD) on income smoothing, we have specified the following econometric model:

$$LLP_{it} = \beta_0 + \beta_1 EBTP_{it} + \beta_2 CAR_{it} + \beta_3 LTA_{it} + \beta_4 TL_{it} + \beta_5 NPL_{it} + \beta_6 LD_{it} + \beta_7 \Delta NPL_{it} + \beta_8 \Delta TL_{it} + \varepsilon_{it} \quad (1)$$

Whereas:

LLP_{it} = Loan loss provision of the bank at time *t*, normalised by the total assets. LLP is considered as the dependent variable.

$EBTP_{it}$ = Earnings before taxes and provisions normalised by the total assets of the bank at the time *t*. It is used to test the evidence of smoothing of income. The regression is used to test whether EBTP has a positive relation with LLP or otherwise. The positive coefficient of EBTP shows that there is evidence of income smoothing. Banks usually increase LLPs when net income is high and decrease when net income fall (Ahmed, Takeda, & Thomas, 1999; Collins, Shackelford, & Wahlen, 1995; Fonseca & Gonzalez, 2008; Adzis, Tripe, & Dunmore, 2010).

CAR_{it} = Capital adequacy ratio of bank *i* in year *t*. Earlier studies also control for the CAR effect on LLPs (Ahmed, Takeda, & Thomas, 1999); (Boulila Taktak, Ben Slama Zouari, & Boudriga, 2010; Dong, Liu, & Hu, 2012; Kola, Gjipali, & Sula, 2019).

$Ln(TA_{it})$ = Log of Total Assets. The natural log of total assets is used as control variable which accounts for the size of the bank. It is a prominent proxy used to measure the size of the bank (Fernando & Ekanayake, 2015).

TL_{it} = Total loans normalised by the total assets of bank *i* in year *t*. Loans outstanding represent the risk profile of the banks (Boulila Taktak, Ben Slama Zouari, & Boudriga, 2010). The probability of default is on the higher side when the amount of total outstanding loans is high. Therefore, loan loss provisions have a positive relationship with total outstanding loans (Adzis, Tripe, & Dunmore, 2010).

NPL_{it} = Non-performing loans normalised total assets of bank *i* in year *t*. Similar to total loans, non-performing loans are also used for the measurement of default risk (Ahmed, Takeda, & Thomas, 1999; Collins, Shackelford, & Wahlen, 1995). A positive coefficient depicts that LLPs will increase when non-performing loans increase, which reflect deterioration in the quality of bank loans (Adzis, Tripe, &

Dunmore, 2010). When non-performing loans are higher, LLPs would be higher (Bouvatier & Lepetit, 2008; Dong, Liu, & Hu, 2012). Therefore, non-performing loans (NPL) is expected to have a positive relationship with LLPs.

LD_{it} = Loan to deposit ratio of bank *i* in year *t*. It measures the relationship between loans and deposits received from customers. More external funds are required when the ratio is on the higher side and to attract external funds, so that perceived risks are adjusted through LLPs (Zoubi & Al-Khazali, 2007; Adzis, Tripe, & Dunmore, 2010).

ΔNPL_{it} = Change in non-performing loans of bank *i* in year *t* normalised by total assets. Change in non-performing loans is used to account for a non-discretionary component of loan loss provisions (Kanagaretnam, Lobo, & Mathieu, 2003; Bayar, 2019).

ΔTL_{it} = Change in total loans of bank *i* in year *t* normalised by total assets. Change in total loans is used to account for a non-discretionary component of loan loss provisions (Kanagaretnam, Lobo, & Mathieu, 2003). It is used as a proxy to measure the default risk of the bank. Due to higher growth in loans, LLPs are on the higher side. Therefore, the change in total loans (TL) is expected to have a positive relationship with LLPs (Fonseca & Gonzalez, 2008; Dong, Liu, & Hu, 2012).

3.3. Estimation Strategy

We employed panel regression to examine the impact of earnings variability, capital adequacy and loan to deposit ratio on income smoothing in the banking sector of Pakistan. The data of banks is unbalanced panel as the NIB was merged with MCB in the year 2017. So, we have included its sample from the year 2010 to 2015. Further, unbalanced panel regression has been used due to the cross-sectional nature of data and endogeneity problem. Panel regression has been employed to correct for potential correlation of endogenous explanatory variables with the error term in the equation rendering the Ordinary Least Square (OLS) estimator no longer consistent. The study estimates a linear regression model through OLS with some modification that is based on (Adzis, Tripe, & Dunmore, 2010; Ahmed, Takeda, & Thomas, 1999; Fernando & Ekanayake, 2015).

4. Empirical Results

4.1. Descriptive Statistics

The descriptive statistics of the key variables have been estimated. It reports descriptive statistics of the dependent and independent variables. Descriptive statistics include the mean, median, maximum, minimum, standard deviation, Skewness, Kurtosis, JarqueBera (JB) of the variables of 20 banks listed on the Pakistan Stock Exchange from the years 2010 to 2017.

Table 1: Descriptive statistics of the variables

	Mean	Median	Max	Min	Std. D	Skew	Kurt	JB	Obs
CAR (%)	15.50	14.30	52.61	1.08	6.96	2.31	11.54	608.09***	155
ΔNPL (%)	0.003	-0.002	0.311	-0.337	0.048	-0.182	31.00	5064.08***	155
ΔTL (%)	-0.02	-0.01	0.49	-0.57	0.08	0.09	28.44	4178.43***	155
LD (%)	0.604	0.574	1.119	0.230	0.164	0.797	3.520	18.17***	155
LLP (%)	0.043	0.032	0.253	0.000	0.044	2.187	8.965	353.36***	155
TL/TA (%)	0.426	0.427	0.728	0.008	0.121	-0.634	4.200	19.67***	155
EBTP (PKR Millions)	6314738	6013.82	102000000	-2866.40	16610823	3.40	15.77	1351.52***	155
LLP (PKR Millions)	24059082	11184026	604000000	473540.9	53203150	8.6	92.7	53836.3***	155
NPL (PKR Millions)	27068680	19423896	128000000	0.0	27414487	1.8	6.0	139.8***	155
TA (PKR Millions)	603000000	399000000	4720000000	30511120	639000000	2.69	14.13	987.83***	155
TL (PKR Millions)	229000000	164000000	921000000	14505537	204000000	1.38	4.304	60.55***	155

Table 1 exhibits descriptive statistics of the variables used in this study. Annual observations of banks listed on PSX have been utilised over the period of 2010-2017. The dependent variable includes the loan loss provisions (LLP). Whereas, capital adequacy ratio (CAR), change in non-performing loans(ΔNPL), change in total loans (ΔTL), loans to deposit ratio (LD), total loans deflated by total assets (TL), earnings before taxes and provisions (EBTP), non-performing loans (NPL), total assets (TA) and total loans (TL).

The mean and maximum of LLP is 4.3% and 2.53% in Pakistani banks, which shows that a trend of provisioning exists. The mean of capital adequacy ratio (CAR) is 15.50%, and the maximum is 52.61%, which reveals that Pakistani commercial banks adhere to the capital adequacy ratios imposed by the State Bank of Pakistan. The mean of the loan to deposit (LD) ratio is 60.4%, which represents adjustment of perceived risks through the increase of bank deposits. The mean and maximum of EBTP is Rs. 6.3 million and 102 million and the standard deviation is Rs.16.6 million, which shows that a mix of Pakistani commercial banks includes high and low earners. The mean and maximum of non-performing

loans (NPL) is Rs. 27 million and 128 million, and the standard deviation is Rs. 27 million, which depicts that non-performing loans are prevalent in commercial banks of Pakistan, despite stringent regulations. The mean of total assets (TA) is Rs. 603 million and the maximum is 4720 million and standard deviation of Rs.639 million, which represents that Pakistani commercial banks include both large and small banks. The mean of total loans (TL) is Rs.229 million, and the maximum is 921 million and standard deviation is 204 million, which represents not only growth in banking operations but also in the economy as well.

4.2. Correlation Matrix

Correlation analysis is conducted to find the relationship strength of the independent variables. The correlation matrix shows all the independent variables including capital adequacy ratio (CAR), change in non-performing loans (ΔNPL), change in total loans (ΔTL), earnings before taxes and provisions (EBTP), loans to deposit ratio (LD), non-performing loans (NPL), total assets (TA), total loans (TL) and total loans deflated by total assets (TL).

Table 2: Correlation Matrix

	CAR	ΔNPL	ΔTL	EBTP	LD	LLP	NPL	TA	TL	TL/TA
CAR	1									
ΔNPL	0.049 (0.5410)	1								
ΔTL	-0.004 (0.963)	0.361*** (0.000)	1							
EBTP	0.182*** (0.023)	0.466*** (0.000)	0.155 (0.053)	1						
LD	-0.475*** (0.000)	-0.120 (0.137)	0.012 (0.884)	-0.350*** (0.000)	1					
LLP	0.068 (0.401)	-0.370*** (0.000)	-0.156*** (0.053)	-0.230*** (0.004)	0.300*** (0.000)	1				
NPL	-0.165 (0.040)	0.017 (0.833)	-0.169*** (0.036)	0.317*** (0.000)	0.045 (0.582)	0.120 (0.138)	1			
TA	0.191*** (0.017)	0.204*** (0.011)	-0.007 (0.932)	0.655*** (0.000)	-0.450*** (0.000)	-0.153*** (0.057)	0.617*** (0.000)	1		
TL	0.127 (0.117)	0.272*** (0.001)	0.004 (0.962)	0.667*** (0.000)	-0.318*** (0.000)	-0.156*** (0.052)	0.596*** (0.000)	0.91*** 0.00	1	
TL/TA	-0.497*** (0.000)	-0.003*** 0.973	0.033 (0.687)	-0.223*** (0.005)	0.786*** (0.000)	0.187*** (0.020)	0.042 (0.606)	-0.34*** (0.00)	-0.039 (0.632)	1

*** Statistical significance at the 1% level, ** Statistical significance at the 5% level,
* Statistical significance at the 10% level

Table 2 exhibits the results of income smoothing and imposition of regulatory measures in the sample of Pakistani commercial banks for the years 2010 to 2017. The results of the correlation matrix show that regression does not suffer from serious multicollinearity problems as the explanatory variables in the correlation matrix do not highly correlate with each other. The coefficient of EBTP is positive at the 1% level, which shows that chances of smoothening are higher when earning variability increases. Moreover, the correlation between CAR and LLP is positive. There is also a negative and significant relationship between LD, NPL and LLP, which shows that growth in loans does not affect loan loss provisions, which indicates good risk management of the banks. Moreover, both of TA and TL have a positive correlation with LLP at the 1% significance level, which shows that provisioning increases as a result of the increase in the size of the banks as well as total loans.

4.3. Regression Results

Table 3 shows the results of the pool and panel regression with the aim to determine the effect of income smoothing on the LLPs. Pool regression results are reported in Table 3. We observed a significant negative impact of EBTP and CAR on LLP, while a significant positive relationship between NPL, LD and LLP for listed Pakistani banks. It is important to highlight that the relationship between EBTP and LLP is negative and significant at the 10% level and supports the expected sign. The significant positive sign between LLP and EBTP suggests that listed banks in Pakistan are not engaged in earning management behaviour. The significant positive relationship between loan deposits ratio (LD) and LLP indicates income smoothing behaviour banks in Pakistan as major banks in Pakistan are lending most of their deposits for consumer financing as loan and advances.

The model explains 58.3% of the variation in LLP due to the explanatory variables. The relationship between CAR and LLPs is negative and significant at 1% significance level, which means that the imposition of higher CAR due to Basel Accords has resulted in a reduction in income smoothing. The implementation of financial reforms in the form of strict regulations resulted in less manipulation of income. However, there is a negative and insignificant relationship between the log of TA and LLP. Whereas, there is a positive but insignificant relationship between TL and LLP, which is in line with the literature, which shows a positive relationship between the growth of loans and smoothening of income. There is a negative and insignificant relationship between change in non-performing loans (NPL) normalised by total assets and income smoothing. This suggests that when non-performing loans increase, it results in a decrease in income smooth-

ing, which means enough provisions are available to handle this risk. The results are contrary to Bouvatier & Lepetit (2008) and Dong, Liu, & Hu, (2012). There is a positive and significant relationship between the loan to deposit ratio (LD) and LLP at 1% significance level, which means that an increase in LD ratio raises the need for external funds. This requires perceived risk to be adjusted through LLPs. The finding is similar to Zoubi & Al-Khazali (2007) and Adzis, Tripe, & Dunmore (2010). There is also a negative and insignificant relationship between change in non-performing loans (ΔNPL) and LLP. There is a positive but insignificant relationship between change in total loans (ΔTL) and LLP. The finding is similar to Fonseca & Gonzalez (2008) and Dong, Liu, & Hu, (2012).

Table 3: Results of the Regression Model

Variables	Signs	Pooled OLS	Random Effect
Constant		0.882555 (0.2123)	0.369208 (0.2296)
EBTP	+/-	-0.586222 (0.2570)	-0.048113 (0.9073)
CAR	+/-	-0.002791 (0.0000)***	-0.002539 (0.0000)***
LN(TA)	+/-	-0.038960 (0.2440)	-0.011165 (0.4567)
LN (TL)	+	0.425821 (0.0000)***	0.530234 (0.0000)***
NPL	+	0.405827 (0.0754)	0.349450 (0.0228)**
LD	+	0.335600 (0.0000)***	0.148887 (0.0251)**
ΔNPL	+	-0.209164 (0.1366)	-0.190269 (0.2940)
ΔTL	+	0.060698 (0.1946)	0.026523 (0.7525)
Adjusted R-squared		0.572999	0.446552
F-statistic		8.703584	16.63278
x^2		8 (1.000)	

*** Statistical significance at the 1%, ** Statistical significance at the 5% level,
* Statistical significance at the 10% level

Pooled regression results are presented in Colum 3. Random effect results are exported in Colum 4. Dependent variable includes Loan Loss Provisions (LLP), and independent variables are earnings before taxes and provisions (EBTP), capital adequacy ratio (CAR), total assets (TA), total loans (TL), non-performing loans normalised by total assets (NPL), loans to deposit ratio (LD), change in non-performing loans (CNPL) and change in total loans (CTL).

Furthermore, we used a panel regression estimation technique for two reasons. Firstly, due to the cross-sectional nature of data. Secondly, to incorporate the possible endogeneity problem in data. The last column of Table 3 depicts the results of random effect. Further, we employed the Hausman test to retain the results of fixed or random effect. The Hausman test suggest ($\chi^2 = 8$, p-value = (1.000)) p-value is not significant. Therefore, we retain the results of the random effect.

The results of the random effect shown in the last column of Table 3. EBTP reveals that there is a negative but insignificant relationship between EBTP and LLP at 10% significance level. Increase in EBTP has resulted in a reduction in income smoothing, which shows that manipulation activities reduce as a result of an increase of earnings before tax and provisions probably because of the imposition of stringent regulations. The findings of this study are consistent with the results of Ghafar b. Ismail, Shah Shaharudin, & Samudhram (2005) and Shaharudin (2004). Further, there is a negative and significant relationship between capital adequacy ratio (CAR) and loan loss provisions (LLP) at 1% significance level, which means that the imposition of higher CAR has resulted in a reduction in income smoothing in the banks. These findings are consistent with the results of Dong, Liu, & Hu, (2012).

Total assets are also an important indicator of political sensitivity. The estimation test shows that there is a negative but insignificant relationship between LTA and LLPs at 5% significance level, which shows that LLPs are less pronounced at large Pakistani banks. The results are in accordance with Shawtari, Saiti, Razak, & Ariff (2015).

Total loans have been included to learn more about non-discretionary behaviour of the banks. There is a positive and significant relationship between TL and LLPs at 1% significant level, which shows that a higher level of loans growth may reflect higher credit risk which, in turn, results in an increase in income smoothing in Pakistani banks. The findings of this study are consistent with the results of Dushku (2016).

Non-performing loans as a ratio of total loans is a measure of bank default probability. As we expected, there is a positive and significant relationship between non-performing loans (NPL) and LLPs at the 5% level. This shows that when non-performing loans increase, it results in an increase in income smoothing. The findings of this study are in line with the study of Dushku (2016).

LD is used as a measure of the requirement of external finance for the banks as they finance their loans as well as portfolios using customer deposits. There is a positive and significant relationship between loan to deposit ratio (LD) and LLP

at a 5% significance level, which means that an increase in the LD ratio increases income smoothing in the banks. It then increases the need for external funds causing perceived risk to be adjusted through LLPs. The finding is in line with Zoubi & Al-Khazali (2007), Adzis, Tripe, & Dunmore(2010) and Shawtari, Saiti, Razak, & Ariff (2015). The findings of this study are also in line with the result of Kanagaretnam, Krishnan, & Lobo (2009) and Kwak, Lee, & Eldridge (2009), where a greater need for external finance would encourage bankers to smoothen earnings. In Pakistani banks, the managers indulge in discretionary LLPs in order to smoothen earnings and reduce volatility so as to attract more funds. In other words, they smooth income to signal stable returns to customers.

There is a negative but insignificant relationship between change in non-performing loans (ΔNPL) and LLP at a 5% significance level, and it is contrary to the expectation. Further, there is a positive but insignificant relationship between change in total loans (ΔTL) and LLP at 10% significance level. The results are in accordance with Fonseca & Gonzalez (2008) and Dong, Liu, & Hu, (2012).

In summary, the overall estimations demonstrate that Pakistani banks do not smooth income through loan loss provisions when earnings increase. Further, income smoothing activities decrease as a result of the increase in capital adequacy ratios after the imposition of stringent rules, which exert greater regulatory pressure. Whereas, the pace of income smoothing increases as a result of an increase in loans to deposit ratio (LD) in banks.

5. Summary and Conclusion

This study investigated the impact of variability in earnings, stringent regulatory measures and the trend of extending loans while keeping in view the deposit ratio on income smoothening practices in the commercial banks listed on the Pakistan Stock Exchange (PSX). This study used a sample of 20 commercial banks listed on PSX from the years 2010 to 2017. This study assessed whether LLPs are used for income smoothening and achievement of management objectives in the case of Pakistan, in the presence of stringent capital requirements. The analysis was carried out using least squares and random effect. We found that commercial banks are less likely to manage earnings through smoothening practices, which shows that commercial banks adhere to regulatory restrictions. This is supported by the fact that income smoothing activities decrease as a result of the increase in capital adequacy ratios after the imposition of stringent rules, which exert greater regulatory pressure on banks. Whereas, the pace of income smoothing increases as a result of an increase in loans to deposit ratio in banks, which reveals that

banks take credit risk but manage within the ambit of regulatory restrictions. Based on the findings, we argue that the imposition of regulatory restrictions through SBP has not only discouraged income smoothening through loan loss provisions despite the growth of deposit ratio, but also enhances reporting quality.

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